

**Amendments to the Specification:**

Please replace the paragraph beginning at page 1, line 5 with the following:

This invention relates to a switch, for use on an electronic circuit or the like, adapted for switching over a propagation path for an external signal by ~~contacting~~attracting or ~~non-contacting~~repelling the movable member to or from the electrode.

Please replace the paragraph beginning at page 1, line 19 with the following:

As a micro-fabricated switch in a size around 100  $\mu\text{m}$ , there is known one described in IEEE Microwave and Wireless Components letters, Vol. 11 No 8, August 2001 p334. This switch forms a signal line for radio-signal transmission over a membrane, to provide a control electrode immediately beneath the signal line. In case a direct current potential is applied to the control electrode, the membrane is pulled and deformed toward the control electrode by an electrostatic ~~attractive~~ force. By a contact with a ground electrode formed on the substrate, the signal line formed on the membrane becomes a shorted state. Due to this, the signal flowing through the signal line is attenuated down or blocked off.

Please replace the paragraph beginning at page 3, line 22 with the following:

However, the direct current voltage of as high as approximately 30 V or more is required to ~~contact~~attract the membrane toward the control electrode. It is not preferred to build such a switch as needing a high voltage within a radio transceiver apparatus.

Please replace the paragraph beginning at page 4, line 9 with the following:

Also, on the RF-MEMS switch for example, when the movable member is ~~contacted~~attracted on the electrode, in case the drive voltage is turned off into a state not to give an ~~electrostatic~~attractive force to the movable member, the movable member is returned by its own spring force to a predetermined position distant from the electrode. For ~~contacting~~attracting the movable member at high speed to the electrode by a low drive voltage, the spring force of the movable

member must be weakened. This, however, poses a problem of low response speed for the movable member to return to a predetermined position.

Please replace the paragraph beginning at page 6, line 6 with the following:

From these problems and requests, there is a desire for a switch realized with switch high-speed response on low driving voltage and a widened gap at between the movable member and the electrode, enabling to increase the response speed for the movable member ~~contacted~~attracted on the electrode to return to a predetermined position distant from the electrode and to control the magnitude of an overshoot of the movable member.

Please replace the paragraph beginning at page 6, line 21 with the following:

A switch of the present invention is a switch for switching over an external signal propagation path by ~~contacting~~attracting or ~~non-contacting~~repelling a movable member to or from an electrode, the switch comprising: an input port for inputting an external signal; and a movable member connected to the input port; a first electrode for propagating the external signal; a first control power supply connected to the first electrode and for generating a control signal; a second electrode for blocking the external signal; and a second control power supply connected to the second electrode and for generating a control signal; whereby the first control power supply provides a control signal to the first electrode, the movable member being displaced by a driving force generated based on a potential difference between the movable member and first electrode and a potential difference between the movable member and second electrode, thereby being ~~contacted~~attracted to the first or second electrode. This makes it possible to realize a switch for signal propagation characteristic improvement, high-speed response, low consumption power and low driving voltage.

Please replace the paragraph beginning at page 10, line 18 with the following:

Fig. 1 depicts a plan view of a switch 1 in embodiment 1 of the present invention. An on-side electrode 3 is attached with an on-side control power supply 5 while an off-side electrode 4 is with an OFF-side control power supply 6. When the switch is on, a movable member 2 is to be ~~contacted~~attracted on the on-side

electrode 3. The signal inputted through an input port 7 propagates to an output port 8 through the movable member 2 and on-side electrode 3. When the switch is off, the movable member 2 is to be ~~contacted~~attracted on the off-side electrode 4. The signal inputted through the input port 7 propagates to the ground through the movable member 2 and off-side electrode 4.

Please replace the paragraph beginning at page 12, line 3 with the following:

In a drive scheme, a control signal 21 of alternating current voltage as shown in Fig. 2 is switched over, at time t, to a direct current voltage control signal 23 at a constant voltage, to apply an electrostatic force in a direction toward the on-side electrode 3 or off-side electrode 4 acting to ~~contact~~attract the movable member 2. By thus placing the control signal 21 under control, to the movable member 2 is applied a constant external force in a direction toward the on-side electrode 3 or off-side electrode 4. By ~~contacting~~attracting the movable member 2 on the on-side electrode 3 or off-side electrode 4, the propagation path of signal is switched over.

Please replace the paragraph beginning at page 13, line 18 with the following:

Incidentally, by ~~contacting~~attracting the movable member to the electrode with the movable member always vibrated at higher speed than a desired response speed, it is possible to realize a high response speed corresponding to a vibration frequency.

Please replace the paragraph beginning at page 14, line 3 with the following:

Also, by vibrating the movable member at a higher speed than a desired response speed with a state the movable member ~~contacted~~attracted on the electrode, a high response speed can be realized. In this case, the frequency for vibrating the movable member may be at a self-resonant frequency of the movable member in a form that the movable member is ~~contacted~~attracted on the electrode.

Please replace the paragraph beginning at page 14, line 10 with the following:

Also, by vibrating the movable member with a state the movable member ~~contacted~~attracted on the electrode, the movable member can be released from the

electrode and returned, with high electrical isolation, to a predetermined position at high speed without causing a capacitance coupling between the movable member and the electrode.

Please replace the paragraph beginning at page 27, line 1 with the following:

Fig. 12 shows a plan view of a switch 1 in embodiment 4 of the invention. This embodiment 4 is to make a driving by the use of a Lorentz force. The movable member 2 and the electrode 9 are passed by driving currents in the same direction, to cause a ~~non-contacting~~repellent Lorentz force which is to be utilized as one driving force. Only when the movable member 2 is returned to a predetermined position distant from the electrode 9, a driving force based on the Lorentz force is provided, enabling to increase the response speed when returning to the predetermined position. The currents are under control of a control power supply 10.

Please replace the paragraph beginning at page 27, line 12 with the following:

The present drive scheme can be used as a hybrid drive scheme combined with another drive scheme, such as an electrostatic drive scheme, a magnetic force drive scheme, an electromagnetic drive scheme or a piezoelectric drive scheme, enabling to realize a switch higher in performance. For example, it is possible to apply a hybrid drive scheme combining the electrostatic and Lorentz force drive schemes that the movable member 2 and the electrode 9 are ~~contacted~~attracted to each other by an electrostatic force wherein, only when returning the movable member 2 to a predetermined position, a drive force based on a ~~non-contacting~~repellent Lorentz force is provided.

Please replace the paragraph beginning at page 27, line 24 with the following:

Incidentally, the signal propagation path can be switched over by using a drive force using an ~~electrostatic~~attractive and ~~non-contacting~~repellent Lorentz force caused by flowing drive currents through the movable member 2 and electrode 9. The two drive currents, if opposite in direction, causes an ~~electrostatic~~attractive force upon the movable member 2 and electrode 9, whereby the electrode 9 is ~~contacted~~attracted to the electrode 9. Meanwhile, in case the drive currents are in

the same direction, a ~~non-contacting~~repellent force acts between the movable element 2 and electrode 9, whereby the moving member 2 is returned to the predetermined position distant from the electrode 9. The currents are under control of the control power supply 10.

Please replace the paragraph beginning at page 28, line 12 with the following:

Meanwhile, a high resistive material may be used in either one of the movable member 2 or the electrode 9, to utilize a polarity inversion speed due to a comparatively low carrier mobility of the high resistive material. Due to this, with the movable member 2 and the electrode 9 in contact with by an electrostatic ~~attractive~~force, the polarity of the movable member 2 or electrode 9 is inverted in which instance the movable member 2 and the electrode 9 turn into the same polarity to cause a ~~non-contacting~~repellent force. This force can be used as a drive force for returning the movable member 2 to a predetermined position.

Please replace the paragraph beginning at page 28, line 23 with the following:

Otherwise, a high dielectric insulation material comparatively low in polarity inversion speed may be used in an insulation layer to be formed on an electrode between the movable member 2 and the electrode 9. Due to this, with the movable member 2 and the electrode 9 in contact with by an electrostatic~~attractive~~ force, the movable member 2 is inverted in polarity in which instance the movable member 2 and the insulation layer surface turn into the same polarity to cause a ~~non-contacting~~repellent force. This ~~non-contacting~~repellent force can be used as a drive force for returning the movable member 2 to a predetermined position.

Please replace the paragraph beginning at page 34, line 24 with the following:

Next explained is an embodiment on a method for controlling to relieve the magnitude of an overshoot in one direction of the movable member in a switch shown in Fig. 13. Fig. 16 shows a figure of a control signal 161 and a position of the movable member 2. In the case of not applying a control signal 161, the movable member 2 makes an overshooting as along the curve 162. Accordingly, applied is a control signal as the curve 161. Namely, control is made to apply the movable body

with a force opposite in direction to the overshoot to be relieved but corresponding in magnitude to the overshoot. The control signal 161 is reduced in magnitude as the vibration of movable member 2 with overshoot is attenuated, wherein, when the movable member 2 nearly returned to a predetermined position distant from the electrode 9a, 9b, applied is the control signal 141 just like crossing the control signal 161. By doing so, the movable member 2 can relieve the magnitude of an overshoot on an opposite side to the side an electrostatic~~attractive~~ force is applied to the movable member 2.

Please replace the paragraph beginning at page 39, line 12 with the following:

Incidentally, in the case of contacting~~attracting~~ the movable member of a mechanical switch by an electrostatic force, the movable member and the electrode may have a contact interface in a wave form, rectangular form or the like. When forming a movable member and an electrode by a plating process, there is a need to form, through the use of a sacrificial layer 205, a gap vertically high in aspect ratio between the movable member and the electrode or an extremely narrow gap between the movable member and the electrode. By making the sacrificial layer 205 in a waveform or rectangular form, the sacrificial layer 205 is made ready to stand, enabling to form a contact interface or gap between the movable member and electrode with higher accuracy. Meanwhile, conventionally, there is a problem that, in a contact interface between the rectangular movable member and electrode, the corner of a convex part is cut into a round or the corner deep in a concave is not accurately cut leaving a sacrificial layer. However, by the structure waveform-rounded in the contact interface between the movable member and the electrode, it is possible to realize an accurate contact interface/gap of movable member and electrode uniformly cut in an etching process on a sacrificial layer 205.

Please replace the paragraph beginning at page 40, line 21 with the following:

Also, realized is an increase in the response speed for the movable member contacted~~attracted~~ on the electrode to return to a predetermined position distant from the electrode. Furthermore, it is possible to control the magnitude of overshoot of a movable member.